

Remarks

Further and favorable reconsideration is respectfully requested in view of the foregoing amendments and following remarks.

Statement of Substance of Interview

Applicants acknowledge, with appreciation, the courtesy of a personal interview granted to their attorney by Examiner Wilkins on June 12, 2007, the results of which are set forth in the Interview Summary form prepared by the Examiner, and given to Applicants' attorney, at the conclusion of the interview. Applicants' attorney hereby confirms the Examiner's remarks on the Continuation Sheet attached to the Interview Summary form.

Thus, Applicants' attorney proposed amending the specification and claims 1 and 2 so as to refer to "atomic weight ratio" instead of "molar ratio" in the specification, and to refer to "atomic weight ratio" instead of "weight ratio" in claims 1 and 2. Based on the arguments presented below (and summarized in the Interview Summary form), the Examiner indicated that these amendments will result in withdrawal of the rejection of the claims under the first paragraph of 35 U.S.C. §112.

Amendments

The specification and claims 1 and 2 have now been amended as agreed upon with the Examiner, to refer to "atomic weight ratio" instead of "molar ratio" in the specification, and to refer to "atomic weight ratio" instead of "weight ratio" in claims 1 and 2.

As noted during the interview, and as also indicated in the Interview Summary form, Tables 2 and 4 in the specification provide H/C ratio values for each of Examples 1-6 and Comparative examples 1-5. Referring to Comparative Example 4 first, which uses a carburizing gas of propane (C_3H_8) without any hydrogen, the total atomic weight of the 3 carbon atoms in one molecule of C_3H_8 is 36 (3 multiplied by 12 (atomic weight of carbon)), and the total atomic weight of the 8 hydrogen atoms in one molecule of C_3H_8 is 8 (8 multiplied by 1 (atomic weight of hydrogen)). Thus, the atomic weight ratio H/C

of 100% propane gas is 0.22 ($8 \div 36$). One of ordinary skill in the art would thus recognize that, in view of the value of 0.22 in Table 4 for the H/C ratio in Comparative example 4, the term "molar ratio" as originally set forth in the application is an error, and should be corrected to recite the "atomic weight ratio" of H/C.

The other Examples and Comparative examples use a carburizing gas containing both propane and hydrogen, and give H/C ratios. For instance, in Example 1, since H₂ gas is used for dilution in addition to C₃H₈, the H/C ratio is the ratio of the total atomic weight of the carbon atoms in the process gas C₃H₈ to the sum of the total atomic weight of the hydrogen atoms in the process gas C₃H₈ and the total atomic weight of the hydrogen atoms in the diluting gas H₂.

The total atomic weight of the carbon atoms in the process gas C₃H₈ is:

$$\text{Flow rate of C}_3\text{H}_8 \times (\text{Total atomic weight of the carbon atoms in C}_3\text{H}_8 / \text{Molecular weight of C}_3\text{H}_8) = 20 \times (36 / 44) = 16.36$$

The sum of the total atomic weight of the hydrogen atoms in the process gas C₃H₈ and the total atomic weight of the hydrogen atoms in the diluting gas H₂ is:

$$\begin{aligned} &\text{Flow rate of C}_3\text{H}_8 \times (\text{Total atomic weight of the hydrogen atoms in C}_3\text{H}_8 \\ &/ \text{Molecular weight of C}_3\text{H}_8) + \text{Flow rate of the diluting gas H}_2 = 20 \times (8 / 44) + \\ &100 = 103.6 \end{aligned}$$

The atomic weight ratio H/C of the carburizing gas used in Example 1 of the present invention is therefore 6.3 (= 103.6 / 16.36), as set forth in Table 2.

Thus, given the H/C ratio values set forth in Tables 2 and 4, one of ordinary skill in the art would see that the term "molar ratio" is an error, and that this term should be corrected to "atomic weight ratio".

Response to Rejection

The rejection of claims 1 and 2 under the first paragraph of 35 U.S.C. §112 is respectfully traversed.

Considering the foregoing comments, Applicants respectfully submit that Applicants did have possession of the presently claimed invention at the time the present application was filed, and therefore, this rejection should be withdrawn.

Accordingly, the application is now considered to be in condition for allowance, and such allowance is solicited.

Respectfully submitted,

Eiichi ISHII et al.

By:



Michael R. Davis
Registration No. 25,134
Attorney for Applicants

MRD/pth
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
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